Safety and Cost-effectiveness of Off-pump Coronary Artery By-pass Surgery in Elderly Patients

A Randomized Study of 900 Patients above 70 Years

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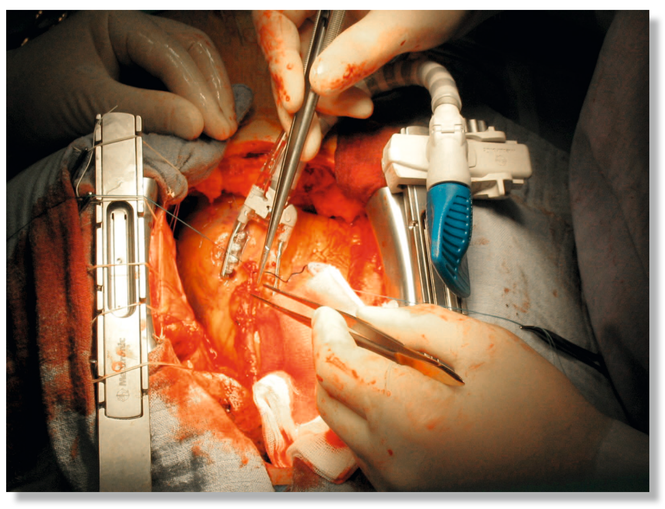
Aim

To calculate short term incremental cost-effectiveness ratio of Off-pump Coronary artery By-pass Grafting (OPCAB) versus Conventional Coronary Artery Bypass Grafting (CCABG)

Background

World-wide, around 1000.000 patients undergo coronary artery by-pass surgery every year. Increasingly, elderly patients are being offered the operation. During recent years, development of mechanical stabilizers and intracoronary shunts have made OPCAB possible in almost all patients requiring surgical coronary revascularization (Figure 1). This is the first large-scale study to evaluate the economic implications of this change in operative technique specifically in elderly patients.

Figure 1



Methods

A total of 900 patients above 70 years of age were randomized to receive either OPCAB or CCABG at four different Danish cardiac surgery centers. The direct costs of surgery were calculated using patient specific data for all direct costs including, materials and supplies, OPCAB stabilizers, equipment for cardiopulmonary by-pass, blood, time in operating theatre, time in intensive care unit, and time in ward.

Gain in Quality of Life (Qol) was calculated as the difference in EQ-5D scores at baseline and 6 month after surgery.

A cost-effectiveness ratio (cost/effect) was calculated for each type of surgery

Results

Six months mortality was 19 in the OPCAB and 21 in the CCABG group (p=ns). Mean gain in Qol (and 95% confidence intervals) was 0.0845 (0.0646 – 0.1043) for OPCAB and 0.0919 (0.0714 – 0.1124) for CCABG.

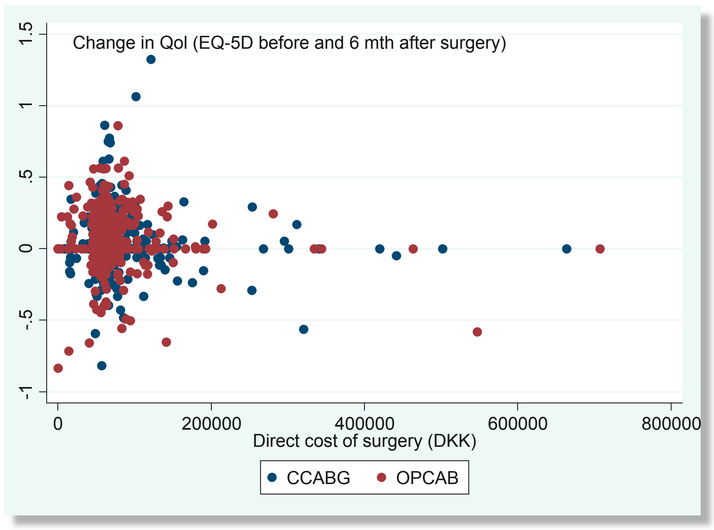
Patients in both groups had a mean Qol 6 month after surgery similar to Danish EQ-5D norms for men aged 70-79 (mean 0.8470 (0.8301 – 0.8631)). Mean Qol was 0.8376 for OPCAB and 0.8401 for CCABG.

Figure 2 shows a scatterplot of direct costs and change in Qol. Mean direct cost (and 95% confidence intervals) was DKK 71.751 (66.740 – 76.761) for OPCAB, and DKK 75.097 (69.749 – 80.447) for CCABG.

Cost-effectiveness ratio was DKK 74.287 for CCABG and DKK 77.193 for OPCAB.

1 Euro = 7,44 DKK

Figure 2



Discussion

OPCAB and CCABG provide comparable results with regard to gain in QoL and cost effectiveness. The present calculations only include direct costs of the initial bypass surgery, and inclusion of other types of costs may change the result.

Multi Centre Trial
DOORS